ANNUAL INSECT REPORT, REGION 4

R.H. RUTLEDGE
NOVEMBER 8, 1930

November 8, 1930.

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Insect Control, R-4
Annual Report

The Forester,

Washington, D. C.

Dear Sir:

Nevada Forests:

There is little insect activity on the three Nevada Forests of importance at the present time. The Toiyabe secured an identification of a pinion pine scale as Matsucoccus acalyptus Herbert which caused them some alarm for a short time but apparently this has failed to extend its boundaries. Some species of tip moth are doing a small amount of damage to pinion pine on this Forest and a few single leaf pinion (Pinus monophylla) had been killed by some species of bark beetle. The Humboldt reports little if any change in damage due to the aspen borer but this, with the fir tussock moth, is not doing as much damage this year as previously. This year no apparent concentration of activity was observed. Whether the tussock moth is seriously parasitized in the Jarbidge area is not yet known.

Central and Southern Utah Forests:

Nothing is reported from the Uinta or Manti.

On the Fishlake scattering alpine fir trees are being killed by the balsam fir beetle (Dryocoetes confusus). On the La Sal "a few scrub top trees scattered widely in small bunches of from one to six trees within our yellow pine stands" have been reported. The beetle has not been identified by an entomologist but we feel very sure that

Copy for information Mr. Miller

it is D. brevicomis or is that called D. barberi in the southern Utah region. At any rate, it is not the Black Hills beetle and can be handled by the local force without any allotment of project funds.

No infested trees were found on the Kaibab this year.

On the Dixie the only beetle work reported is the killing of an occasional alpine fir tree probably by Dryocoetes confusus.

On the Powell the Engelmann spruce beetle which has been killing Engelmann spruce on the Aquarius and Boulder Plateaus since the creation of the Forest is still so active that it is not thought any control measures are justified. Two western yellow pine trees were found infested with the Black Hills beetle this summer and they were treated when found.

Northern Utah Forests:

A copy of the Ashley report is enclosed herewith. Apparently the Ashley is still doing a very creditable job of insect control work. Three hundred dollars is estimated for work on the Ashley next year.

On the Wasatch there are from 20 to 40 lodgepole pine trees infested with the mountain pine beetle on the head of Provo River. We have been attempting for several years to get rid of these in our sales work and by Administrative Use but are apparently getting an increase rather than a decrease. On the East Fork of Blacks Fork in T. 2 N., R. 6 W., from 200 to 400 lodgepole pine trees newly attacked by the mountain pine beetle have been discovered. As nearly as can be ascertained there is an increase there this year of about three to one. The area to be worked here is from three to four sections. In the Grandaddy Lakes area in T. 3 N., R. 7 W., are about 200 lodgepole pine trees newly attacked by the mountain pine beetle. Seven hundred dollars is estimated for control work on the Wasatch Forest. The timber on Provo River and that on the East Fork of Blacks Fork is within a stand of merchantable timber where it can readily be marketed for railroad ties, poles, etc., and the timber in the Grandaddy Lakes country is within a recreation area of high value. In all cases immense bodies of lodgepole pine are adjacent to the infested areas and no chances can be taken of this building into an epidemic similar to the Bitterroot or western Idaho.

Western Idaho Forests:

On the Weiser, Idaho, Payette, Boise, Sawtooth, Challis, Salmon, and Lemhi Forests the mature lodgepole pine is apparently doomed. The estimates for the entire lodgepole pine area in this vast region run from a small percentage already killed to as high as 80% or 90% of the trees over 12" in diameter. The following is quoted from the Idaho's report:

"The infestation has spread rapidly during the past year and observations show that all of our lodgepole type and a greater portion of the limber pine type is now infested to some extent. On large areas the whole stand of merchantable timber has been destroyed, and the degree of damage varies from such a heavy kill to large acreages where only small groups of trees have been killed. It appears that the beetle epidemic is moving in all directions and it is evidently just a matter of time until the main attack will have covered the lodgepole pine type."

In the Bear Valley region on the Payette where the epidemic seemed to build up in a strong way about as early as any place, the ranger is of the opinion that it may be on a decline. The Supervisor remarks that it may be due to the fact that most of the larger timber has already been killed. The ranger reports that in a number of trees examined the beetles were found to have died before they emerged. On the other three districts of the Payette the Supervisor reports that the beetle attacks are spreading at least as far as formerly, if not actually increasing.

On the Salmon Forest the report shows that on the Salmon, Forney, and Yellowjacket ranger districts where the epidemic became severe at about the same time as did the Bear Valley epidemic, that there is apparently a decrease in the activity probably on account of the large percentage of larger lodgepole pine trees being already killed. On the Indianola, Hughes Creek, and Lemhi districts which join the Beaverhead and Bitterroot Forests the attacks are showing a rapid increase.

The pine butterfly was hardly noticeable this summer. The spruce budworm epidemic is apparently at an end. The fir tussock moth is so seriously parasitized that Mr. Evenden expects it also is about to return to normal.

The western pine beetle (D. brevicomis) is more or less in evidence throughout the western yellow pine type but not in serious form so far

as we can tell. There is, of course, a very serious loss in the aggregate but we just do not know whether any control operations should be started and if they should, we would not know where to start except to start in areas of highest stumpage values. No recommendations for controlling the western pine beetle are made at this time but it may be that we are making a mistake in failing to make such recommendation. We are going on the basis that we dare take more chances with brevicomis than with monticolae or ponderosae. We also have all that we can handle in the lodgepole pine job in the eastern Idaho Forests. We know too little about brevicomis and will appreciate your discussing this question with Dr. Craighead and giving us the benefit of his advice. Mr. Evenden is pretty well acquainted with conditions in that region. The balsam fir beetle is, of course, regularly taking its toll of alpine fir and occasionally grand fir in this area.

Minidoka Forest:

The Minidoka Forest has for several years been taking active measures in an attempt to secure control of the mountain pine beetle in lodgepole pine through sale and Administrative Use permits. Last year they treated possibly 400 or 500 trees with oil by the burning-standing tree method but on account of the more important work on the eastern Idaho and western Wyoming Forests it was impossible to give the Minidoka Forest officers full instruction in the method. The result was that the trees treated were burned to an insufficient height and probably not burned heavy enough. A careful cruise was made on the Minidoka this fall and there will be probably at least 1200 trees to treat there next spring. Enclosed is a copy of the Minidoka report.

Eastern Idaho and Western Wyoming Forests:

Most of the control work done F. Y. 1930 was on the Cache, Caribou, Targhee, Teton and Wyoming Forests. Some work was done in the fall of 1929 but the principal part of it was done in the spring of 1930. The attached table gives a summary of the work done on these five Forests in the spring of 1930, with footnotes giving roughly a summary of the work done in the fall of 1929. It is probable that a few more trees were treated on the Forests in the fall of 1929 than are shown in the footnotes but the figures to all intents and purposes are correct. In addition to this, cruises were made on all of these Forests in the fall of 1929 which were used as the basis of spring work. It may be said that in all cases where strip cruises were made by the method developed by the Bureau of

Entomology that the number of trees located in the spring of 1930 was surprisingly close to the estimate. It did not seem possible to us in Region 4 that the strip cruise would come very close to the number of trees actually found the following spring but we are now convinced that a strip cruise even though made on as low a percentage basis as 2½% gives a very close estimate over large areas of the number of infested trees actually on the area. We have learned also that in running the strip cruises the two important points to be careful about are to make them mathematically correct so that the area can be definitely determined, and to carry the strips far enough outside of known infested areas to be sure to include all infested trees.

Enclosed are copies of the reports on each of the five Forests in this group. The results are very encouraging on a few of the units on the Forests and as a whole on the areas worked last year, a reduction of roughly 60% was secured. On the five Forests as a whole a reduction of only 27% was secured varying from a reduction of 68% on the Targhee to an increase of 120% on the Caribou. On the area actually worked on the Caribou we secured a reduction of probably about 60% and on the area actually worked on the Wyoming the number of trees to be treated in the spring of 1931 is almost exactly the same as the number treated in the spring of 1930. The increase on the Wyoming is due to the fact that the entire infested area was not treated in the spring of 1930. We were under the impression at the completion of the work on Greys River the last of June that we had worked over the entire infested area and did not know that there existed infested trees outside of the areas worked with the exception of a few groups farther up the river than time, available funds, and fire conditions would permit us to work. The following table gives the results of last spring's work and the Forest estimates of the number of trees to be treated in the spring of 1931.

Forest	Trees Treated			Est. to Treat 1931	Per Cent		Remarks
	Fall 1929	Spring 1930	Total		Red.	Inc.	
Cache	2605	14553	17158	6365	63%		
Caribou	1514	3079	4593	10000		120%	New areas
Targhee	1200	30065	31265	10000	68%		
Teton	-	4515	4515	1500	67%		
Wyoming	-	17160	17160	26600		55%	On areas worked - hold even. Increase is on new areas
	5319	69372	74691	54465	27%		

The condition on the Caribou is disappointing in our failure to locate all groups of infested trees on the Forest. The reduction in the infestation on the area worked, while not nearly as good as we expected, was about average for the group of Forests other than the Wyoming. On Greys River the results on the area worked were particularly disappointing since it was not believed by anyone connected with the project in the spring of 1930 that it would be possible for a sufficient number of beetles to escape to attack practically as many trees as were treated in the spring of 1930. True, it was realized that the infested trees on Greys River were particularly large and particularly tall but it was our belief that nearly all of the beetles would be killed on account of the fact that the heaviest broods are almost always found in the first two log lengths from the ground. Our equipment enabled us to reach a height of 32 feet from the ground with the oil and it was expected that the height above the point to which the oil could be thrown would be sufficient to kill the beetles for a few more feet above that point. We also thought that we were "crowning out" a considerably larger percentage of the trees which were ~~never~~ treated than it now appears that we did. I am still unable to understand why the trees look black higher up in the spring of 1930 than they do in the fall of 1930.

Mr. Evenden has covered in detail, and very well, the action which must be taken in future control work and with his conclusions all in this Region are in full accord. We will therefore plan in next spring's work to make our spotting as nearly 100% correct as is humanly possible, to eliminate insofar as possible failure to find groups of trees, to treat each infested tree found to its full infested length, and in short, to not let a beetle escape if we can help it. In order to do this it will be necessary to fell all trees which are infested more than 30 feet from the ground. Some of these felled trees may be burned with oil if it is found that they can be as effectively and more cheaply in this way; if not, they will be decked and burned. Since practically all of the areas worked last spring will have to be worked over again next spring and since we have a lot of additional known infested territory, and since the felling of a large number of the trees will be necessary, and since we must take a lot greater care in locating the trees for treatment, our costs are going to be considerably higher than they have ever been in this Region before. As nearly as we can estimate the cost per tree will be $1.50 next year. This seems very high and nobody hates to admit that the cost will be as high as this more than we do in Region 4. However, we do not dare estimate for a lower cost per tree than $1.50. The Forests, including the Minidoka, Wasatch, and Ashley where control measures must be carried on, estimate a total of approximately 57,000 trees. We are raising that in this office to 60,000 trees which we are sure in our own minds

is probably 10,000 or 20,000 less trees than we will actually find. Our estimate of funds needed for 1931 including the $12,000 already allotted to us, is $90,000. We will therefore require an additional allotment of $78,000. It is presumed that a part of this allotment must come from the deficiency appropriation and if this is the case, a part of it should be made available for the F. Y. 1931 and 1932 and should be expended in Utah, Idaho and Wyoming. This will enable us to continue the control operations after the first of July which is entirely practicable in a few areas especially by burning at night and it will also give us a better opportunity to continue right up to the 30th of June. It is realized, of course, that in a project of this magnitude it is impossible to tell just exactly how our allotment stands each night, particularly when the work is scattered over so many Forests as are involved in our project here.

Your particular attention is called to the report of the Supervisor of the Caribou Forest. His analysis of the situation is particularly good and can be taken as the guide to all of the control work which will be done in Region 4 in the spring of 1931.

Only 38 trees have been treated by the burning-standing tree method on the Cache this fall. One hundred and twenty-two trees have been treated on the Wyoming this fall which practically completes the work on the Wyoming with the exception of the large project on Greys River. The Wyoming has just started control operations by the felling, decking and burning method on the lower end of Greys River, U. S. Swartz being in charge of the project and with a crew of 17 men including all Forest officers available on the Wyoming. No control work by the burning-standing method has been done on the Teton or Caribou this fall. On the Targhee considerable control work has been done this fall by a combination of the burning-standing tree method and felling and burning in decks method. No more burning with oil will be done on the Targhee this fall but they will continue with the local force felling, decking and burning as long as this can be done. It is expected that about a month's work will be done on Greys River this fall. Full report of 1930 fall operations will be sent your office as soon as the reports are received from the Forests.

We cannot emphasize too strongly the necessity for securing ample appropriations for the work covered by this report. Every year up to the present time we have attempted to do our insect control work with less funds than was absolutely necessary to do the job. Last year before the control work had gone very far we realized that our funds were entirely insufficient and decided to stop the felling and burning of tall trees

which we knew we were not treating high enough with the result that we have as many trees to treat next year as we treated last year. We thought at the time, and are still convinced, that this was the best thing to do, namely, to get the maximum number of beetles possible with the funds available but we know now that no chances can be taken by leaving any beetles knowingly. We are not disputing the percentage control theory but we realize the impossibility of locating 100% of the beetles. We are frankly disappointed with the results of our insect control work to date but we are not discouraged. We have no illusions, however, about the possibility of securing 100% control in all cases where new epidemic centers are found. We realize that it is always going to be necessary to mop up for at least one year following a control project.

On several of the areas where control measures have been carried on for one or two years we are apparently breaking the back of the epidemic as is evidenced by the fact that the attacks in many cases are confined to the lower portions of the boles of the trees and the larger percentage of pitched out attacks. It is also noticeable that beetles are in those places apparently choosing a larger percentage of overmature trees and trees weakened by injury, disease or mistletoe. This factor will make the burning-standing tree method more applicable than it has been in the past.

No maps are being enclosed with this report except a map of the Wyoming, since it is not thought that maps of the other Forests will add anything to the report this year. I might say, however, that the epidemic centers on the Caribou are scattered from the extreme north end of the Forest almost to the south end, and entirely across the Forest from east to west.

Very truly yours,

R. H. RUTLEDGE, Regional Forester,

Encl. By C. B. Morse Acting.

COSTS OF INSECT CONTROL WORK - SPRING 1930

Forest	No. Trees Treated Spring 1930	Total Cost Proj. Funds	Total Cost Cont. Time	Total Cost Total	Cost per Tree Proj. Funds	Cost per Tree Cont. Time	Cost per Tree Total	Area Treated	Trees Per A.	Cost per Acre Proj. Funds	Cost per Acre Cont. Time	Cost per Acre Total	Oil Used Total (gallons)	Oil Used Per Tree (gallons)
Cache	* 14,553	$5015.61	$2104.48	$7120.09	$0.344	$0.144	$0.488	23,250	$0.626	$0.215	$0.091	$0.306	9815	.67
Caribou	x 3,079	1874.19	1107.32	2981.51	.608	.360	.968	3,240	.95	.61	.36	.97	2110	.685
Targhee	xx 30,065	23068.00	5381.00	28449.00	.767	.179	.946	67,948	.442	.339	.079	.418	22658	.753
Teton	4,515	1707.61	1354.53	3062.14	.378	.30	.678	4,000	1.14	.427	.338	.765	3300	.73
Wyoming	17,160	14929.20	8580.00	23509.20	.87	.40	1.27	60,800	.28	.24	.12	.36	12368	.72
	69,362	$46594.61	$18527.33	$65121.94	.67	.267	.937	159,238	.44	.29	.116	.406	50251	.724

* 2605 trees treated in fall of 1929 at cost of $0.43 per tree.
x 900 trees treated in fall of 1929 for which no cost figures are available; 614 trees also removed under Administrative Use.
xx 800 trees treated fall of 1929 and 400 removed under Administrative Use.